

This listing of claims will replace all prior versions and listings of the claims in the application:

**Listing of the Claims:**

1. (Currently amended)      A nuclear fuel dissolution apparatus which comprises a perforated sloping ramp contained within a process chamber for containing solvent for the fuel, a pulsation member which in use creates pulses in solvent in the process chamber, the perforations being designed to direct pulses of solvent along and up the ramp, and a discharge point for fuel hulls disposed at an upper region of the ramp characterized in that the ramp is made out of flat blades and the perforations of the ramp comprise inclined slits formed between the blades, wherein the ramp is spiral and the gradient of the spiral in an upper zone thereof is greater than in a lower zone.

2. (Cancelled)

3. (Original)    An apparatus of claim 1 in which the process chamber has an outer side wall which is circular in cross section.

4. (Original)    An apparatus of claim 1 in which the gradient of the spiral is between 1 and 30 degrees.

5. (Original)    An apparatus of claim 4 in which the gradient is between 1 and 20 degrees.

6. (Cancelled)

7. (Original)    An apparatus of claim 1 in which the angle between the plane of the blades and the horizontal is between 10 and 60 degrees.

8. (Original)    An apparatus of claim 1 in which the inclined slits are no more than 10 fuel pin diameters in length.

9. (Currently amended) ~~An apparatus of claim 1 in which~~ A nuclear fuel dissolution apparatus which comprises a perforated sloping ramp contained within a process chamber for containing solvent for the fuel, a pulsation member which in use creates pulses in solvent in the process chamber, the perforations being designed to direct pulses of solvent along and up the ramp, and a discharge point for fuel hulls disposed at an upper region of the ramp characterized in that the ramp is made out of flat blades and the perforations of the ramp comprise inclined slits formed between the blades, wherein the blades are made in the form of a trapezium and are fastened by the smaller end to a central blade support within the process chamber.

10. (Original) An apparatus of claim 1 in which the average width of the blades is between 3 and 5 times the distance between them.

11. (Currently amended) ~~An apparatus of claim 1 in which~~ the distance between the ~~plates~~ blades at the outside wall of the container is 0.4 to 0.8 times the fuel pin diameter.

12. (Currently Amended) ~~An apparatus of claim 1 in which~~ A nuclear fuel dissolution apparatus which comprises a perforated sloping ramp contained within a process chamber for containing solvent for the fuel, a pulsation member which in use creates pulses in solvent in the process chamber, the perforations being designed to direct pulses of solvent along and up the ramp, and a discharge point for fuel hulls disposed at an upper region of the ramp characterized in that the ramp is made out of flat blades and the perforations of the ramp comprise inclined slits formed between the blades, wherein the pulsation member comprises a pulsation chamber disposed centrally within the process chamber.

13. (Original) An apparatus of claim 12 in which a neutron absorber is arranged between the pulsation chamber and an inside wall of the annular container.

14. (Cancelled)

15. (Cancelled)

16. (Currently Amended) An apparatus of claim ~~15~~ 19 in which the gradient of the spiral is between 1 and 30 degrees.

17. (Original) An apparatus of claim 16 in which the gradient is between 1 and 20 degrees.

18. (Currently Amended) An apparatus of claim ~~15~~ 19 in which the angle between the plane of the blades and the horizontal plane is between 15 and 60 degrees.

19. (Currently Amended) ~~An apparatus of claim 15 in which~~ An apparatus for the treatment of solid articles by liquid, comprising a container having an outer side wall of circular cross section, a spiral ramp located in the container, and a pulsator communicating with a lower part of the container, and also pipe connections for feeding in and removing pieces of fuel pin, solution and gas, characterized in that the ramp is made up of flat blades placed one after another along the spiral and forming between one another inclined slit nozzles and the perforations of the ramp comprise inclined slits between the blades, wherein the gradient of the spiral in an upper zone thereof is greater than in a lower zone.

20. (Currently amended) ~~An apparatus of claim 15 in which~~ An apparatus for the treatment of solid articles by liquid, comprising a container having an outer side wall of circular cross section, a spiral ramp located in the container, and a pulsator communicating with a lower part of the container, and also pipe connections for feeding in and removing pieces of fuel pin, solution and gas, characterized in that the ramp is made up of flat blades placed one after another along the spiral and forming between one

another inclined slit nozzles and the perforations of the ramp comprise inclined slits between the blades, wherein the blades are made in the form of a trapezium and are fastened by the smaller end to a central blade support within the process chamber.

21. (Currently amended) An apparatus of claim 15 19 in which the average width of the blades is between 3 and 5 times the distances between them.

22. (Original) An apparatus of claim 1 in which the pulsation member comprises a pulsation chamber disposed coaxially within the process chamber.

23. (Currently amended) A method ~~of comprising~~ dissolving fuel in chopped nuclear fuel pins in ~~an~~ a nuclear fuel dissolution apparatus according to claim 1 which comprises a perforated sloping ramp contained within a process chamber for containing solvent for the fuel, a pulsation member which in use creates pulses in solvent in the process chamber, the perforations being designed to direct pulses of solvent along and up the ramp, and a discharge point for fuel hulls disposed at an upper region of the ramp characterized in that the ramp is made out of flat blades and the perforations of the ramp comprise inclined slits formed between the blades.

24. (Currently amended) A method according to claim 23 ~~wherein the apparatus comprises a perforated sloping ramp contained within a process chamber for containing solvent for the fuel, and a pulsation member which in use creates pulses in solvent in the process chamber, the perforations being designed to direct pulses of solvent along and up the ramp, the method comprising loading solvent into the process chamber, loading fuel pin pieces onto a lower region of the ramp and creating solvent pulses to transport the fuel in pin pieces up the ramp to a discharge point when the cladding hulls are discharged from the ramp.~~

25. (Original) A method of claim 23 which is performed in the reprocessing of nuclear fuel, the method further including reprocessing the dissolved fuel to form a fissile material optionally in the form of a fuel pellet, a fuel pin or a fuel assembly.